Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for specifically detecting ~~by biomolecular recognition~~ a primary amino acid in a sample, said method comprising:

contacting said ~~sample with~~ primary amino acid to be detected with a plurality of aminoacyl tRNA synthetases, wherein each member synthetase of said plurality differs from other member synthetases of said plurality according to the cognate primary amino acids thereof and wherein said plurality of tRNA synthetases comprises an aminoacyl tRNA synthetase cognate to said primary amino acid to be detected, and

~~to form a first product~~ wherein said contacting is under reaction conditions capable of forming a product with said primary amino acid to be detected, wherein said product is selected from the group consisting of the aminoacyl- tRNA synthetase:amino acid AMP complex of said primary amino acid to be detected, inorganic pyrophosphate, the aminoacyl-tRNA corresponding to said primary amino acid to be detected, and AMP; thereby forming said product; and

specifically detecting said ~~first~~ product. ~~whereby said product is detected by biomolecular recognition.~~

Claim 2 (previously presented): The method of claim 1, wherein said detecting detects inorganic pyrophosphate.

Claim 3 (previously presented): The method of claim 1, wherein said detecting detects an aminoacyl tRNA synthetase:aminoacyl-adenosine monophosphate complex of said primary amino acid.

Claim 4 (original): The method of claim 1, wherein the sample comprises a plurality of primary amino acids.

Claim 5 (original): The method of claim 1, wherein said aminoacyl tRNA synthetase is immobilized on a solid support.

Claim 6 (original): The method of claim 1, wherein said primary amino acid is phenylalanine.

Claim 7 (original): The method of claim 1, wherein said primary amino acid is glycine.

Claim 8 (original): The method of claim 1, wherein said primary amino acid is aspartic acid.

Claim 9 (original): The method of claim 1, wherein said sample is a biological sample.

Claim 10 (original): The method of claim 9, wherein said sample is a blood sample or a serum sample.

Claim 11 (currently amended): The method of claim 1, wherein said sample is a ~~generated by~~ N-terminal or C-terminal digest~~ion~~ of a polypeptide or protein.

Claim 12 (currently amended): The method of claim 1, wherein said sample is a hydrolysate ~~comprises amino acids released by hydrolysis of the peptide bonds~~ of a protein.

Claim 13 (previously presented): The method of claim 1, wherein said contacting is with an aminoacyl tRNA synthetase for each of the 20 primary amino acids.

Claim 14 (currently amended): The method of claim 1, wherein said ~~first~~ product is labeled and said detecting is by means of said label.

Claim 15 (currently amended): The method of claim 1, wherein said ~~first~~ product is directly detected.

Claim 16 (currently amended): The method of claim 1, wherein said ~~first~~ product is indirectly detected.

Claim 17 (currently amended): The method of claim 4, wherein said method said plurality of amino acids in said sample are each to be specifically detected, and

wherein said plurality of amino acids to be specifically detected in said sample is contacted with said ~~a~~ plurality of aminoacyl tRNA synthetases, wherein ~~each synthetase of~~ said plurality of aminoacyl tRNA synthetases there is a member cognate to ~~a different primary amino acid~~ each member of said plurality of primary amino acids ~~in said sample,~~ to be detected; ~~to form a plurality of first reaction products;~~ and

wherein said contacting is under reaction conditions capable of forming a plurality of said products; and

wherein said plurality of said products forms and comprises a product for each member of said plurality of the primary amino acids to be specifically detected, and

wherein said detecting separately detects each member of said plurality of said ~~first reaction~~ products, and

whereby each member of said plurality of said primary amino acids to be detected in said sample is specifically detected.

Claim 18 (currently amended): The method of claim 17, wherein the detecting is quantitative and the amount of each primary amino acid of said plurality of primary amino acids to be detected in said sample is thereby determined.

Claim 19 (currently amended): The method of claim 17, wherein said members of said plurality of aminoacyl tRNA synthetases are spatially resolved.

Claim 20 (currently amended): The method of claim 17, wherein said members of said plurality of aminoacyl tRNA synthetases are immobilized on a solid support.

Claim 21 (previously presented): The method of claim 17, wherein each of said plurality of aminoacyl tRNA synthetases is located at a known locus of a spatial array, and wherein said detecting is according to said known locus.

Claim 22 (currently amended): The method of claim 21, wherein each member of said plurality of ~~first reaction~~ products is labeled and said detecting is by means of detecting said label.

Claim 23 (currently amended): The method of claim 17 [[13]], wherein ~~an~~ a spatial array is formed by separately locating each of said aminoacyl tRNA synthetases at a known locus of a solid support selected from the group consisting of microtiter surface, microwell, microchannel and microcapillary array.

Claim 24 (previously presented): The method of claim 1 [[17]], wherein the detecting is quantitative and the amount of said primary amino acid in said sample is determined.

Claim 25 (currently amended): The method of claim 1, wherein said primary amino acid to be detected is contacted with its cognate tRNA and the product is the aminoacyl tRNA of the primary amino acid to be detected. ~~said first product is an aminoacyl tRNA synthetase: aminoacyl-adenosine monophosphate complex and said detecting is by indirect means comprising:~~

~~contacting said first product with a tRNA for said primary amino acid to form a second product; and~~

~~detecting said second product.~~

Claims 26-27 (canceled).

Claim 28 (currently amended): The method of claim 25, ~~further comprising~~ wherein said primary amino acid to be detected is contacted ~~contacting said first product~~ with a plurality of tRNAs,

wherein each member tRNA of said plurality of tRNAs differs from other member tRNAs of said plurality of tRNAs according to the cognate primary amino acids thereof;

wherein said plurality of tRNAs has a member cognate to said primary amino acid to be detected; and

wherein ~~said plurality of tRNAs are spatially separated~~ each member tRNA of said plurality of tRNAs is located separate from other member tRNAs of said plurality of tRNAs at a known locus on ~~an~~ a spatial array;

and wherein said aminoacyl tRNA of the primary amino acid forms at the known locus of the tRNA cognate to the primary amino acid to be detected; and

wherein said detecting specifically detects said ~~second product and identifying the detected amino acid according to said known location of said second product~~ formed aminoacyl tRNA of the primary amino acid to be detected according to the known locus of the tRNA cognate to the primary amino acid to be detected.

Claim 29 (currently amended): The method of claim 28 [[25]], wherein each of said member tRNAs of said plurality of tRNAs are ~~wherein said tRNA is~~ immobilized on a solid support and said ~~second~~ product is thereby immobilized on said solid support.

Claim 30 (currently amended): The method of claim 28 [[26]], wherein ~~said tRNA for said primary amino acid~~ each of said member tRNAs of said plurality of tRNAs is fluorescently labeled and said label is used to detect said ~~second~~ product.

Claim 31 (currently amended): The method of claim 25 [[26]], further comprising contacting said aminoacyl tRNA with an elongation factor binary complex with GTP or a GTP analog to form a ternary complex and by detecting said ternary complex.

Claim 32 (original): The method of claim 31, wherein said factor is elongation factor Tu or elongation factor 1A in a complex with GTP or a GTP analog.

Claim 33 (currently amended): The method of claim 32, wherein said GTP analog is a nonhydrolyzable analog of GTP. ~~which is incorporated into said ternary complex~~.

Claim 34 (canceled).

Claim 35 (original): The method of claim 31, wherein said elongation factor is labeled.

Claim 36 (currently amended): The method of claim 28 [[25]], wherein said [a] spatial ~~an~~ array ~~of tRNAs for the primary amino acids is formed by separately locating each of said plurality of tRNAs at a known locus~~ is located on a solid support.

Claim 37 (previously presented): The method of claim 36, wherein said solid support is selected from the group consisting of microtiter surface, microwell, microchannel, glass chip, and microcapillary array.

Claim 38 (currently amended): The method of claim 1, wherein said ~~detecting is by means of~~ product has a label detectable with a fluorescence detector, a proximity scintillation surface, a spectrophotometer, a luminometer, a scintillation counter, a Raman spectrophotometer, a charge coupled device camera, or a gamma counter.

Claim 39 (original): The method of claim 1, wherein a molecular sieve through which compounds of greater than about 6 kDa cannot pass separates said sample from said aminoacyl tRNA synthetase.

Claim 40 (currently amended): The method of claim 25, wherein the detecting is quantitative and the amount of said primary amino acid to be detected in said sample is determined.

Claim 41 (original): The method of claim 31, further comprising contacting said ternary complex with a biorecognition element; and detecting the interaction of said ternary complex with said biorecognition element.

Claim 42 (currently amended): The method of claim 28, wherein each member tRNA of said plurality of tRNAs ~~of said tRNA for a primary amino acid~~ comprises a unique distinguishing label for detection.

Claim 43 (currently amended): The method of claim 41 [[31]], wherein ~~said detecting of said ternary complex is by means of a biosensor~~ said biorecognition element is bound to a transducer selected from the group consisting of a piezoelectric crystal, a surface plasmon resonance system, an acoustic wave sensor device, a fluorescence detector or a proximity scintillation surface to form a biosensor, and said detecting of said ternary probe is by means of said biosensor.

Claim 44 (currently amended): The method of claim 41 [[31]], wherein said biorecognition element is bound to a transducer to create an amino acid biosensor.

Claim 45 (canceled).

Claim 46 (currently amended): The method of claim 41 [[31]], wherein the biorecognition element is a ternary complex probe immobilized on a transducer.

Claim 47 (original): The method of claim 46, wherein the transducer is an optical fiber, an electrode, a piezoelectric crystal, a thermistor or a planar wave guide.

Claim 48 (currently amended): The method of claim 31,wherein said tRNA for said primary amino acid to be detected is labeled with a detectable tag.

Claim 49 (original): The method of claim 48, wherein said detectable tag is a fluorophore, a chromophore, a nanoparticle, a metal, an enzyme, a liposome-based label, an electrogenic label, ferrocine, biotin or a radioisotope.

Claim 50 (original): The method of claim 31, wherein said elongation factor is labeled with a detectable tag.

Claim 51 (currently amended): The method of claim 31 [[3]], wherein ~~said complex is contacted with an elongation factor to form a ternary complex and~~ said ternary complex is detected using a ternary complex probe.

Claim 52 (original): The method of claim 51, wherein said ternary complex probe is an antibody or an antibody fragment specific for said ternary complex.

Claim 53 (previously presented): The method of claim 51, wherein said ternary complex probe is a nucleic acid.

Claim 54 (currently amended): The method of claim 28 [[25]], wherein each said member tRNAs of said plurality of tRNAs ~~for said primary amino acid~~ is labeled with a fluorophore, a chromophore, a nanoparticle, a metal, an enzyme, a liposome-based label, an

electrogenic label, ferrocine, biotin or a radioisotope; and said product is the labeled aminoacyl tRNA corresponding to the labeled tRNA of the primary amino acid to be detected.

Claim 55 (currently amended): The method of claim 54, wherein said labeled aminoacyl tRNA is detected by fluorescence, chromophore, radioactive decay, an electrical signal, mass spectrometry, or chemiluminescence.

Claim 56 (currently amended): A spatial array for the detection of a primary amino acid in a sample, wherein said array comprises:

a plurality of spatially separated enzymatically active aminoacyl tRNA synthetases or a plurality of spatially separated tRNAs cognate to ~~for~~ a plurality of the primary amino acids each at a known locus on said array;

means for contacting said sample with said spatially separated synthetases or spatially separated tRNAs ~~to form a first product~~.

Claim 57 (canceled).

Claim 58 (original): The spatial array of claim 56, wherein said spatially separated aminoacyl tRNA synthetases or spatially separated tRNAs collectively provide an aminoacyl tRNA synthetase or tRNA for each of the primary amino acids.

Claim 59 (original): The spatial array of claim 58, wherein said spatially separated aminoacyl tRNA synthetases or said spatially separated tRNAs are immobilized at a known locus on said array.

Claim 60 (original): The spatial array of claim 58, wherein the spatially separated aminoacyl tRNA synthetase or said spatially separated tRNA for said primary amino acid is labeled.

Claims 61-92 (canceled).

Claim 93 (original): The method of claim 32 wherein biorecognition elements are arrayed on a film or scintillator sheet.

Claim 94 (original): The method of claim 32, wherein the formation of the ternary complex employs dual distinguishable fluorescent labels, wherein said elongation factor is labeled with one detectable label and said tRNA for said primary amino acid to be detected is labeled with a second detectable label.

Claim 95 (previously presented): The method of claim 94, wherein said first label is sulforhodamine 101 sulfonyl chloride and said second label is fluorescein, and after formation of said ternary complex, the ratio of bound fluorescein and sulforhodamine 101 sulfonyl chloride labels is determined using a dual-channel laser scanning confocal microscope as a detection system.

Claim 96 (currently amended): The method of claim 25 [[26]], further comprising contacting said aminoacyl tRNA with an aptamer to form a ternary complex and detecting said ternary complex.

Claims 97-102 (canceled).

Claim 103 (previously presented): The array of claim 56, wherein said array is formatted as a microparticle, microbead, microsphere, microspot, microwell, or microfluidic array.

Claim 104 (new):The method of claim 1, wherein said primary amino acid to be detected is alanine, asparagine, aspartic acid, cysteine, glycine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, valine, arginine, glutamic acid, glutamine or valine;

with the proviso that when the primary amino acid in the sample is arginine, glutamic acid, or glutamine the amino acyl tRNA synthetase cognate to the primary amino acid is prebound to the tRNA cognate to the primary amino acid.

Claim 105 (new): The method of claim 17, wherein said members of said plurality of products is detected by mass spectrometry.

Claim 106 (new): The method of claim 25, wherein said detecting comprises contacting the aminoacyl tRNA with a labeled probe that binds the aminoacyl-tRNA and detecting said labeled probe.

Claim 107 (new): The method of claim 106, wherein the labeled probe is an elongation factor, an antibody, or an aptamer.

Claim 108 (new): The method of claim 28, wherein the plurality of amino acid synthetases has members cognate for each of the 20 primary amino acids and the plurality of tRNAs has members cognate for each of the 20 primary amino acids; wherein the 20 primary amino acids are alanine, asparagine, aspartic acid, cysteine, glycine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, valine, arginine, glutamic acid, glutamine and valine.

Claim 109 (new): A method for specifically detecting a primary amino acid in a sample, said method comprising:

contacting said primary amino acid with an aminoacyl tRNA synthetase cognate to the primary amino acid to form a product, and

specifically detecting product, whereby said primary amino acid is specifically detected and wherein said sample is selected from the group consisting of cerebrospinal fluids, fermentation broths, proteolytic digests, cell culture media, blood, or serum.

110 (new): A method for specifically detecting a primary amino acid in a sample, said method comprising:

contacting said primary amino acid with an aminoacyl tRNA synthetase and tRNA cognate to the primary amino acid to form a product to form an aminoacyl tRNA of the primary amino acid; and

contacting said aminoacyl tRNA with an elongation factor binary complex with GTP or a GTP analog to form a ternary complex;

and detecting said ternary complex.

Claim 111 (new) The spatial array of claim 56, wherein said spatially spatially separated tRNAs collectively provide an aminoacyl tRNA synthetase or tRNA for each of the primary amino acids.